

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patent Application No. 10/500,635

Applicant: KUCZYNSKI et al.

Filed: March 30, 2005

TC/AU: 2854

Examiner: Joshua D. Zimmerman

Docket No.: 403125

Customer No.: 23548

Commissioner for Patents  
U.S. Patent and Trademark Office  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

**DECLARATION UNDER 37 CFR §1.132 OF CHRISTIAN DECKER**

Dear Sir:

I, Christian Decker, declare that:

1. I am currently a Research Director at the Centre National de la Recherche Scientifique (CNRS) (National Center for Scientific Research) in Mulhouse, France. I have 25 years of experience in the field of polymerization, curing, and crosslinking reactions induced by UV-visible radiation and lasers, and my laboratory has published over 200 scientific papers and review articles in this field.
2. I have reviewed the referenced patent application and U.S. Patent Publication No. 2003/0036019 to Teng (hereinafter, "Teng"). As one of ordinary skill in the art, I believe I am in a particularly good position to elucidate the differences between the claimed method and the method taught by Teng.
3. The referenced patent application provides a method of producing a flexographic printing plate. The method includes producing an image on a solid layer of light

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sensitive material by selective crosslinking, by insulating zones which are to be crosslinked with amplitude modulated laser light having a wavelength of 390 to 410 nm, and sweeping the layer of the light sensitive material with the laser light to produce crosslinked zones. The solid layer of light sensitive material has a thickness between 0.5 to 2 mm and includes at least one acylphosphine oxide photoinitiator<sup>1</sup> sensitive to the laser light.

4. The "acylphosphine oxide photoinitiator" produces initiating free radicals and quickly "undergoes a photoreaction under effect of said laser light to bleach the layer of light sensitive material" so that the "bleaching renders the crosslinked zones transparent to said laser light in order to enable cross-linking throughout the thickness of the layer of light sensitive material." Thus, the transparent resin obtained allows the radiation to reach the deep-lying areas of samples having a thickness that is considerably large, i.e., a "thickness between 0.5 to 2 mm" and ensures crosslinking throughout the thickness of the layer. Therefore, acylphosphine oxide photoinitiators are very efficient for curing samples with a "thickness between 0.5 to 2 mm."

5. Teng, in contrast, does *not* disclose an acylphosphine oxide photoinitiator. Teng does not disclose any photoinitiator that is even capable of bleaching the layer of light-sensitive material. Accordingly, the method taught by Teng cannot "bleach the layer of light sensitive material, wherein the bleaching renders the crosslinked zones transparent to said laser light."

6. Moreover, the semi-solid radiation-sensitive layer of Teng is very thin, i.e., at least one micrometer (col. 5, line 14).<sup>2</sup> This thickness is three orders of magnitude smaller

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<sup>1</sup> The instant specification discloses that the photoinitiator may be Ciba® Darocur® TPO photoinitiator (page 3, line 4). As shown in the Attached Exhibit A, a product description from Ciba Specialty Chemicals, Ciba® Darocur® TPO photoinitiator is an acylphosphine oxide photoinitiator. Therefore, one of ordinary skill in the art at the time the instant patent application was filed would have understood that Ciba® Darocur® TPO photoinitiator meant an acylphosphine oxide photoinitiator.

<sup>2</sup> One of ordinary skill in the art would not interpret the thickness of Teng as reaching as high as "0.5 to 2 mm." Teng relates to offset printing, which one of ordinary skill in the art would understand to require a surface without relief. As shown in the attached Exhibit B (available at [www.whatisoffsetprinting.com](http://www.whatisoffsetprinting.com); 3rd par.), a unique characteristic of offset printing is that the image and non-image areas are on the same surface level. This means that the photosensitive layers in Teng, used for offset printing, are very thin, i.e., on the order of microns.

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than the claimed light-sensitive material, which has a "thickness between 0.5 to 2 mm." Reactions induced by light are highly dependent on sample thickness due to the limited penetration of UV light and visible radiation in absorbing media. Thus, one of ordinary skill in the art would not have a reasonable expectation of success to apply Teng's method, which is adapted for crosslinking a very thin layer, to photobleach and crosslink a thick light sensitive layer, i.e., a layer having a "thickness between 0.5 to 2 mm."

7. Furthermore, the claimed method also provides a photo-crosslinked polymer with a strong elastomeric character. Such a strong elastomeric character can only be achieved using high molecular weight rubbers bearing reactive double bonds as a starting material. Teng, on contrast, cannot provide a photo-crosslinked polymer with a strong elastomeric character because Teng does not use high molecular weight rubbers bearing reactive double bonds as a starting material.

8. I declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true, that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: August 21, 2008

Signature: Christian Decker  
Christian Decker

## Exhibit A

Ciba Specialty Chemicals  
Coating Effects Segment



Ciba

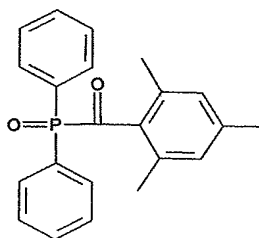
# Ciba® Darocur® TPO

## Photoinitiator

### General

DAROCUR TPO is a highly efficient curing agent which is used to initiate radical photopolymerisation of unsaturated resins such as those based on a prepolymer - e.g. acrylates - in combination with mono- or multifunctional monomers as reactive thinners.

### Chemical Composition



2,4,6-Trimethylbenzoyl-diphenyl-phosphineoxide

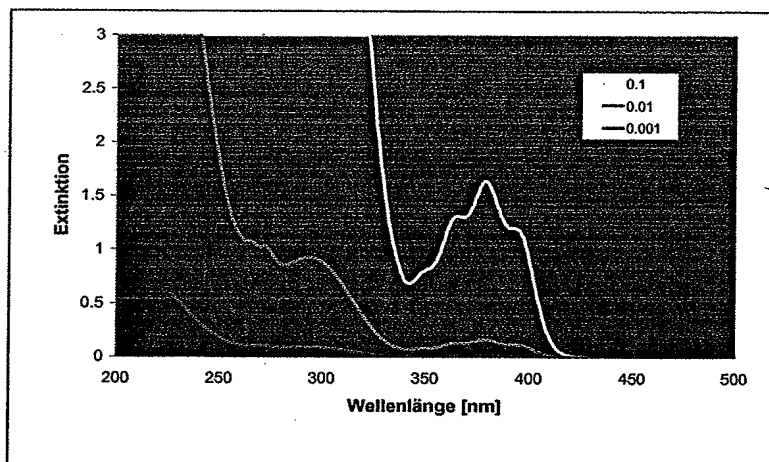
### Physical Properties

Appearance: yellow powder

Melting point: 88-92°C

Specific Gravity: 1.2 (water = 1)

### Absorption Spectrum (% in Acetonitrile)



Ciba Specialty Chemicals  
Coating Effects Segment



## Ciba® Darocur® TPO

Photoinitiator

### Solubility (at 22 °C)

Solvent	wt% dissolved
Acetone	47
n-butyl-acetate	25
IBOA	15
IDA	7
PEA	34
HDDA	22
TrPGDA	16
TMPTA	14
TMPEOTA	13
DAROCUR 1173	>50

### Applications

DAROCUR TPO may be used after adequate testing in UV curable formulations for clear and for pigmented coatings on wood, metal, plastic, paper and optical fibers as well as for printing inks and adhesives.

DAROCUR TPO offers good solubility in common UV reactive systems, e.g. systems based on acrylates or unsaturated polyesters. It can be used as the sole photoinitiator or in combinations with other photoinitiators, like e.g.  $\alpha$ -hydroxy ketones.

The amount of DAROCUR TPO required for optimum performance should be determined in trials covering a concentration range.

### Recommended concentration:

**1 - 5 % DAROCUR TPO**

### Safety and Handling

DAROCUR TPO should be handled in accordance with good industrial practice. Detailed information is provided in the Safety Data Sheet.

### Important Notice

**IMPORTANT:** The following supersedes Buyer's documents. SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's

Ciba Specialty Chemicals  
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# Ciba® Darocur® TPO

Photoinitiator

sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled or lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

## Exhibit B

# What Is Offset Printing?

### What Is Offset Printing?

### Applications Of Offset Printing

### Types Of Offset Presses

### Process Of Offset Printing



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Offset printing is the most commonly used printing method today. Over 40% of all print jobs are carried out using offset printing.

Offset printing works in a simple manner. It uses three cylinders to transfer the image onto the substrate. The first cylinder is mounted with the printing plate. The image on the printing plate is 'right' reading or written with the right side up. The first cylinder is inked and the image transferred or offset onto the second cylinder, which is mounted with a rubber blanket. The image on the second cylinder is thus reversed or becomes 'wrong' reading. Finally the image is transferred from the blanket cylinder onto the third cylinder or the substrate. The substrate is mounted on the third cylinder also known as the impression cylinder. The image once again is reversed and becomes 'right' reading or right side up in the final printed version.

A unique characteristic of offset printing is that the image and non-image areas are on the same surface level. The printing method uses the chemical fact that oil and water do not mix to print from a single surface level. In fact, offset printing acquired this method from lithography and thus it is often referred to as litho offset printing as well.

### Types Of Offset Presses

Offset presses are primarily of two types:

1. Sheet-fed Offset Printing Press: In this kind of offset press the printing is carried out on single sheets of paper as they are fed to the press one at a time.
2. Web-fed Offset Printing Press: In this kind of offset press the printing

### Used Printing Equipment

Heidelberg, Komori,  
MAN Roland For Sale  
By Owner Items Only  
[www.MPLSGuide.com](http://www.MPLSGuide.com)

**Letterpress Printing**  
Free Technical Search  
Engine Search  
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[What are Alnico Magnets?](#)

[What is Four Color Process  
Printing?](#)

is carried out on a single, continuous sheet of paper fed from a large roll. The sheet is then cut into individual sheets of desired sizes.

There are many more differences between the various types of offset presses.

### **The Offset Printing Process**

The offset printing process requires a fairly large investment in equipment and set up. However, once the infrastructure is in place, offset printing itself is relatively inexpensive. There are many things to know about the offset printing process from creating the artwork to operating the press and binding.

### **Applications Of Offset Printing**

Offset printing invades every aspect of our lives from influencing education through the printing of books, periodicals and other reading material to the packaging industry by creative printing of packages for consumer goods. The many applications of offset printing would be difficult to put down but suffice to say that the world would be a much less fun place to live in without offset printing.

Thus, offset printing is the printing technique that has made newspapers possible, books affordable and marketing and promotion the weapons of the common man.



# THE PROCESS OF OFFSET PRINTING

## What Is Offset Printing?

## Applications Of Offset Printing

## Types Of Offset Presses

## Process Of Offset Printing

Offset printing refers to the printing technique where ink is applied to a metal plate that is etched with images, then transferred to a rubber plate and finally imprinted on the substrate. That is just a small part of the entire offset printing process. The entire process involves the pre-press production, the actual press run and the bindery.

### **Creating The Artwork**

The creative process can involve any number of people from graphic artists, cartoonists, copywriters, and creative directors to illustrators and editors. It is very important to proofread the entire artwork before sending for final printing. The artwork is generally sent in a digital format either on CD, floppy or via the Internet.

### **The Printing Process**

Offset printing is something almost every commercial printer is involved in. However the quality of offset printing often depends on the experience of the printer and the equipment used. There are three main steps in the printing process.

- **Pre-press Production:** Once the artwork has been approved it needs to be converted to film and plates for printing. The film negatives are created from the digital files. The images from the negatives are then transferred onto the printing plates much like developing photographs. Different materials from paper to aluminum are used to produce plates. Each of the four colors – C, M, Y and K has a separate plate.
- **The Press Run:** Offset printing works on the principle that oil and water do not mix. The press run or offset printing process or offset press is made of the feeding system, the printing system or three cylinders, the inking system and the delivery system. There are different types of offset presses as well that are used for the press run. The press run starts with a blank substrate and ends with a printed substrate.
- **Bindery:** The bindery is the stage when the printed substrate is given the final treatment before it is declared ready for use. If the substrate is in the form of a large roll, it is cut into required size sheets. It is glued, bound, stapled and collated before being shipped to the final destination.

Thus, the offset printing process involves a number of stages and the hard work of many professionals. It is no wonder that offset printing is a large industry in itself and the applications of offset printing are increasing day by day.

# Applications Of Offset Printing

What Is Offset  
Printing?

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Types Of Offset  
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The next time you read a newspaper, browse through a magazine or even glance at brochures in the mail spare a thought and think about what it takes to print and publish such vast amounts of information and graphics. Offset printing is responsible for almost 40% of all printed material that you see around you.

It would be difficult to create a complete list of the applications of offset printing. If something needs to be printed, offset printing can do it. Here are some examples of the applications of offset printing to get you thinking on the entire scope of offset printing.

- Newspapers are probably the most visible example of offset printing that is a part of everyone's life. Every morning you are greeted with an application of offset printing. It is to the credit of the speed of offset printing that such high volumes can be generated every single day.
- Books are another application of offset printing without which life would simply not be the same. Whether for education or entertainment, books are the life source of many a people and they have offset printing to thank for making books affordable.
- The law too has to thank offset printing for making the legal process more streamlined. Large volumes of legal forms and documents are printed using offset printing.
- Businessmen would be lost without offset printing. Important financial data is at their fingertips thanks to offset printing.
- The marketing and advertising industry would regress by centuries if it weren't for offset printing. The entire direct marketing industry would perish. Offset printing is used for printing flyers, brochures, PR material and a host of other marketing applications.

Thus, offset printing affects every aspect of our lives – social, economical, educational, professional, legal and even our relationships! Hallmark just wouldn't have the same effect without offset printing now would it?